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When the "Soft" Sciences Become Hard: The Safety of Canadian Nuclear Reactors

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Philosophers of science, historians of science, scientists, and lay people alike often refer to the behavioral, social, and cultural sciences--e.g. psychology, sociology, anthropology--as the "soft" sciences. They reserve the rubric of "hard" sciences for physics, chemistry, and, perhaps, biology among others. It is still relatively easy to discover explicit and implicit references and ascriptions to the "hard" sciences as "real" science, "soft" sciences as something less than science. In fact, some "soft" scientists themselves seem to labor under a less than unconscious "hard" science envy and to overcompensate by slavishly adhering to outmoded "hard" science approaches like radical logical positivism, by exhibiting this compulsive hardness in a manner worthy of reaction formation--an escape from softness, and by engaging in holy war and witch hunts against any real or perceived threat to what has been erected.

Yet consider the hard data of the so-called real world. "Soft" science phenomena are responsible for a majority of aviation accidents, personnel security violations, political decision making disasters. In a recent New York Times analysis, the "soft" science phenomena of developing and maintaining a managerial culture that induces the ignoring of security procedures, the cover-up of security violations, and "goofing-off" on the job--even tolerating beer drinking and marijuana smoking while on duty--have been heavily implicated in nuclear reactor operating problems in Canada. "Soft" science phenomena involving ethics, morals, and other values have been implicated in the willful, international proliferation of Canadian reactors that although easy to build seem to present quite difficult and complex issues for management by human operators. Still other "soft" science phenomena leading to, perhaps, questionable financial decisions have impeded the decommissioning of unsafe nuclear plants.

Now consider the "hardness" of scientific pursuit. Isn't it hard enough applying scientific methods to the "hard" sciences that involve elements and context and concepts having half-lives far longer than those of the "soft" sciences? In the latter paradigms can come and go--hardly leaving a trace, while methods and content are uniquely reflexive.

It shouldn't take another nuclear reactor disaster waiting to happen for the "soft" sciences to be taken for what they really are--as hard as they come. (Bowman, M.R. (1996). On the idea of natural science as a resistance to psychoanalysis. *Psychoanalysis and Contemporary Thought*, 19, 371-402; DePalma, A. (December 3, 1997). Exported for decades, Canadian reactors are plagued by operating problems. *The New York Times*, <http://www.nytimes.com>; Richards, G. (1996). *Putting psychology in its place*. London, UK: Routledge. pp. 1-9; Shadish, W.R. (1995). *Philosophy of science and the quantitative-qualitative debates: Thirteen common errors*. *Evaluation and Program Planning*, 18, 63-75.)